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PART VI

WATER RESOURCES COUNCIL

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WATER RESOURCE POLICY STUDY

Issue and Option Papers

WATER RESOURCES COUNCIL

WATER RESOURCE POLICY STUDY

President Carter announced in his Environmental Message to Congress on May 23 that he had directed the Secretary of the Interior, as Chairman of the Water Resources Council, together with the Office of Management and Budget and the Council on Environmental Quality, to conduct a comprehensive review of Federal water resources policy.

He said, "I believe it is essential to confine the public works efforts of the water development agencies to projects that can meet such defensible criteria as economic efficiency, safety, environmental protection, and fair distribution of project benefits." He further said, "We need comprehensive reform of water resources policy with conservation as its cornerstone."

The review is to be completed within six months and will lead to the establishment of a "national resources management policy in consultation with Congress and the public." Therefore, the review is not to be an examination of individual projects nor require a detailed report on agencies and programs. Rather the exercise is to develop options for the President's consideration in making decisions on policy. The emphasis of his policy is to be sensitive and cost-efficient management, more care in how the resource is used, and more careful selection and design of the things to be done.

The direction of the study then is not on new programs or more numerous projects but to provide incentives and to make adjustments that will act to encourage or require conservation of water and efficiency in its use. Nor is the study intended to suggest a new or larger Federal role, but to properly define that role in changing times, and to explore alternatives for the future of water resources development and conservation.

On this basis, eight regional hearings have been scheduled to obtain public participation and viewpoints. The hearings will be held on July 28 and 29 in Minneapolis, Denver, Boston, Atlanta, and Los Angeles and on August 1 and 2 in Seattle, Dallas, and Cincinnati. (See issue of July 6, 1977 (42 FR 34563).) To facilitate the presentation of comments and ideas, four papers are published here on the issues for the review: revision of the planning and evaluation criteria, cost sharing, institutions, and conservation. Any additional documents will be published in the FEDERAL REGISTER during the week of July 18, 1977.

Water quality is not included among these major issues as a separate paper because the President's policy position on this subject is being currently presented to the Congress in the comprehensive testimony on amending the Federal Water Pollution Control Act Amendments of 1972, Pub. L. 92-500. This testimony will be published in the FEDERAL REGISTER during the week of July 18, 1977. However, because water quality is an inseparable characteristic of all water supplies and uses, it will also be covered wherever appropriate as a part of the issues. Comment on this topic and water research is also invited as part of the review.

The four issue papers were prepared by task groups from the Federal water resources agencies, with assistance from several State officials and representatives of State and regional organizations. The problem situations are described and options are presented to meet the problems. It should be understood that the presentation of these options is not meant to restrict the discussion nor to suggest that the recommendations to the President will be confined to these. Instead, a thorough and unencumbered review is encouraged, and comments should cover the full range of interest and available options. Ultimately a representative range will be presented to the President, along with the recommendations of the Cabinet-level policy group designated. Public comment is solicited both to improve the discussion of alternatives and to establish positions of various interests on the alternatives.

The public is encouraged to comment on these papers and issues and to contribute other analyses and recommendations. The comments may be presented at the hearings orally or in writing. Written comments are encouraged and should be sent to the Chairman, Water Resources Council, 2120 L Street NW., Washington, D.C. 20036.

The record will remain open for comments until August 20.

Following are the issue and option papers.

Dated: July 13, 1977.

GUY R. MARTIN,
Alternate to the Chairman, Water Resources Council Chairman, Water Resource Policy Committee.

ISSUE AREA NO. 1: REVISION OF WATER RESOURCE PLANNING AND EVALUATION CRITERIA AND PROCEDURES

INTRODUCTION

The planning and evaluation of Federal water resources programs and projects is a complex process currently followed by over a dozen Federal departments and independent agencies. From 1962 to 1973 the process was governed by rules established within the executive branch and promulgated by the President which were published and known popularly as "Senate Document 97." In September 1973 the President approved a new document prepared by the Water Resources Council pursuant to the 1965 Water Resources Planning Act. The document is entitled "Principles and Standards for Planning Water and Related Land Resources" and contains revised rules for Federal water resources planning, to be phased in as a replacement for Senate Document 97.

These Principles and Standards (P&S) set forth the basic national objectives, accounting system, and planning procedures for most Federal and some federally-assisted water resource project, river basin, and regional plans. The P&S are also used by reviewing offices in assessing the merits of such plans.

However, Federal and federally assisted projects constitute only a part of the system including private, local and state actions directed to water management. Thus, the evaluation of Federal projects requires consideration of actions undertaken by others that affect the same hydrologic area.

Although this paper focuses on the Principles and Standards, it should be noted that they are still in the early stages of implementation. Several of the problems addressed in this paper originated with programs and projects which either were developed under earlier rules or are not included within the present scope of coverage of the P&S. The planning process is also affected by specific Congressional actions, such as the legislation which amended the P&S to fix the discount rate formula for computation of future project benefits, and the legislation which established the project deauthorization review procedures for inactive projects of the Corps of Engineers.

The purpose of this paper is to present a summary of the major problems associated with Federal water resource planning and to suggest a number of options for solving or reducing these problems. Other problems, such as more realistic recreation values, incentives to encourage local solutions to local problems, and establishment of instream flow criteria are not specifically included at this time. However, suggestions for additions or revisions are welcomed.

The problems and options are grouped into three issue categories: Goals and Objectives, Planning and Evaluation Procedures, and Administration of the Planning Process. Some options listed under problem statements are mutually exclusive alternatives and others are not. The "status quo" and "further study" options are viable for each problem. They have been omitted only to simplify the paper. Additional research and analysis may be required in order to implement some of the options that are listed.

Some of the proposed options may apply to more than one of the stated problems, or may overlap with options proposed by other task forces. This is appropriate because it identifies where changes in the planning process could resolve multiple problems or enhance the implementation of policy reforms in other issue areas.

ISSUES

A. *Goals and Objectives*

Federal water and related land resource planning and development, excluding grants and loans, is guided by the objectives set forth in the P&S. There are now two co-equal objectives: (1) obtaining an economic return on the Federal investment (National Economic Development) and (2) maintaining or enhancing the natural environment (Environmental Quality). Additional ob-

jectives could be added which would direct Federal programs to emphasize other desirable ends such as a more equal distribution of income among regions and improvements to security, health and safety. Federal water resource policies adopted to achieve planning objectives should be consistent with non-Federal roles in water resource management and must consider the entire array of water resource programs. Problems and solution options shown below are illustrative of concerns which have been raised over national water objectives and related policy issues.

1. *Problem.* The rationale for limiting the objectives of Federal water resource policy to net (national) economic development and environmental quality has ben questioned by those who believe water projects should explicity serve social objectives such as regional development, social well-being and conservation. Definitions for existing objectives have also been criticized.

Options. a. Add one or more objectives to the existing objectives of net economic gain and enhancement of environmental quality to allow projects to be designed to do the following, regardless of the lack of economic or environmental benefits, e.g.; (1) transfer income from one region to another, (2) contribute to cultural opportunities, (3) increase health, safety and security, (4) other.

b. Include Social Equity as a co-equal objective so as to provide benefits to low income groups and regions.

c. Expand the definition of the Environmental Quality objective to encompass the quality of the human as well as the natural environment.

d. Emphasize water conservation as a component of all objectives.

2. *Problem.* Federal water policies are frequently not coordinated with overall Federal policy. Undesirable results have occurred, such as navigation projects not consistent with overall transportation policy and irrigation projects not consistent with agricultural policies.

Options. a. Require each water agency to analyze and report on the sensitivity of its proposals to related non-water policies.

b. Require the non-water agency(s) with the appropriate related function to participate in the planning effort and to concur in the proposed action before Administration support is given to the water agency's proposal.

c. Transfer relevant functional responsibilities of water resource agencies to other agencies with related non-water functions.

d. Direct an existing or new organization to monitor and integrate water resource policies and projects with other functional policy areas.

3. *Problem.* The Federal role in water resource development has been criticized as unclear, outdated or inconsistent for a number of functional areas such as municipal and industrial water supply, outdoor recreation, urban flood control, fish and wildlife enhancement, irrigation and hydropower. This problem may have developed because policies have not been updated to meet changing needs, clarified where needed, or developed comprehensively.

Options. a. Submit legislation which defines the Federal role in planning and implementation for all functional areas of water resource management.

b. Revise the P&S to reflect a specifically defined Federal role in planning and implementation of all functional areas of water resource management.

c. Implement and strengthen the review of Federal policies and programs called for in the Water Resources Planning Act of 1965 (P.L. 89–80).

4. *Problem.* Direct Federal water resources projects are formulated under the P&S but the related Federal grant and loan programs are not. This leads to inconsistent Federal and local planning efforts.

Options. a. Revise existing federal grant and loan legislation to consolidate, simplify, and integrate existing programs within an expanded P&S. Grant and loan programs would be required to contribute to the objectives established in the P&S.

b. Retain existing grant and loan legislation but revised Federal administrative procedures to show project impacts as required by the P&S.

c. Convert all water resource programs now implemented directly by Federal agencies to programs implemented by non-Federal interests through Federal grants and loans. Coordination would be through a regional clearinghouse as presently required for grant and loan programs.

d. Convert all grant and loan programs to programs implemented by Federal agencies. The P&S would then apply to all Federal water resource programs.

B. *Planning and Evaluation Procedures*

This category contains the more technical problems with water resource planning and evaluation that have been identified by (1) agencies in applying the P&S, (2) reviewers of agency projects developed prior to the P&S, and (3) the general public.

1. *Problem.* The accuracy, propriety, and integrity of water resource project cost estimation and benefit derivation are being challenged.

Options. a. Include projections of inflation to year of initial construction in estimates of economic costs and benefits to reduce the appearance of large cost overruns.

b. Tighten cost-benefit ratio computation through uniform, detailed guidelines prepared by: (1) interagency agreement or (2) independent review board.

c. Have an independent agency or board review project benefits and costs for accuracy and consistency.

d. Increase cost sharing by project beneficiaries to discourage the promotion of economically unsound investments.

e. Remove legislative constraints on computation of navigation benefits and costs to be more consistent with the state of the art and with computation methods applied to other purposes.

f. Replace or supplement the benefit-cost ratio as a decision criterion with (1) cost-effectiveness to achieve non-economic (social, environmental) goals in the least costly manner; and/or (2) maximization of yield (return on investment) to increase the economic return on government investments and eliminate less economically efficient projects within a limited Federal budget.

g. Require a cost recovery plan for the vendible products and services as a part of the project or program planning process to achieve a more equitable distribution of costs among the beneficiaries.

2. *Problem.* Planning documents currently provide little or no information on who benefits from and who pays for water projects, and the President's recent water project review revealed a possible need for economic and social equity criteria in project evaluation.

Options. a. Require all water resource plans to inolude a uniform presentation of the distribution of project benefits and costs based on Principles and Standards requirements.

b. Establish standards or criteria for the distribution of benefits and costs among project recipients as a requirement for Federal assistance.

c. Explicitly include social equity as a co-equal objective in water and related land resource projects so as to highlight information on and set standards for the design of projects which provide benefits to low income groups.

3. *Problem.* Because quantitative analysis of environmental impacts is relatively new and standard methods have not been developed, it is difficult to evaluate environmental factors appropriately, weight them consistently, compare them with economic and other impacts uniformly, and make inter-project comparisons.

Options. a. Convert all environmental impacts to dollar values by advancing the state of the art where possible, or through the judgemental determinations of an independent valuation board.

b. Strengthen administrative requirements for federal water plans to express environmental impacts of projects in dollars wherever feasible, without the assignment of administratively determined values.

c. Develop standard indices to summarize and compare environmental impacts.

d. Establish a uniform procedure to limit the amount of environmental losses acceptable to obtain an economic gain.

e. Expand and improve uniform measurement of environmental impacts by (1) interagency agreement and/or (2) independent review board.

4. *Problem.* The discount rate for planning and evaluating water projects (based on the Government's cost of long term borrowing) has been criticized as being:

a. too unstable for orderly planning (has changed every year since 1968).

Options. (1) Fix the interest rate for a period of time greater than one year. (2) Enlarge the limits within which the

formula rate may change before it is adopted for planning.

b. Too high or too low—those favoring short term gains desire high rates, those favoring long term gains desire low rates.

Option. (1) Adopt a lower (0%–4% rate). (2) Adopt a higher (8%–12%) rate.

c. Inconsistent in its treatment of old versus new projects.

Option. Eliminate the grandfather clause of Section 80(b) of the Water Resources Development Act of 1974, which permits the use of the rate in effect prior to December 1968 for projects authorized prior to January 3, 1969 and apply current criteria.

5. *Problem.* Federal water resource planning is oriented to construction projects rather than to comprehensive management of the nation's water resources by all alternative means. This orientation has precluded the use of nonstructural measures such as flood plain management and pricing policies, and has, therefore, resulted in projects that are not as effective, efficient, or environmentally sound as otherwise possible. At best, nonstructural alternatives do not get a demonstrable consideration as structural measures are considered and authorized.

Options. a. Equalize Federal cost sharing for structural and nonstructural measures to meet all Federal objectives.

b. Favor implementation of nonstructural measures through differential Federal cost sharing policies.

c. Require the presentation of nonstructural or total water management alternatives whenever a structural project is recommended.

d. Expand and strengthen the total resource management role of river basin commissions in both water resource planning and implementation.

C. *Administration of the Planning Process*

Some problems with federal water resource plans and projects appear to be administrative in nature, rather than primarily associated with goals, objectives, or the process and techniques of planning. Some of the significant administrative problems encountered by Federal executive agencies are indicated below.

1. *Problem.* Mechanisms established by existing laws and procedures for coordination of water resources planning have not been implemented, leading to conflicting plans, projects, programs, and policies.

Options. a. Strengthen the organizations responsible for intrawater resource policy coordination in order to implement the coordination procedures called for in the Principles and Standards for Planning and Evaluating Water Resource Projects and in Pub. L. 89–90, the Water Resources Planning Act.

b. Require Federal agency consistency with statewide and regional plans.

c. Establish non-Federal statewide coordinating agencies.

d. Establish and strengthen river basin commissions nationwide and assign them the primary coordination role for both direct Federal and Federally assisted projects and programs.

2. *Problem.* There is a lack of coordination between water quality and water quantity planning efforts, leading to instances of more costly or less effective solutions to watershed problems than would be the case if the planning were less compartmentalized.

Option. a. Require comprehensive regional and state water plans which must include water quantity and water quality elements.

b. Require all federally funded water resource planning to be coordinated through River Basin Commissions or through strengthened Federal Regional Councils, and consistent with areawide water quality plans.

c. Require all federally funded water resource programs to undergo review by a regional clearinghouse agency, as is now required for some federal programs.

d. Require water quality improvement programs to be fully covered by uniform federal requirements of the Principles and Standards, as are direct Federal water resource programs.

e. Allow the states to set coordinated water quality/water quantity project planning and funding priorities.

f. Designate lead responsibility for federal water quality/quantity coordination to one agency or committee.

g. Require water resource planning or project review to be centralized in one federal agency.

3. *Problem.* There is excessive variation in the implementation of project planning procedures and review processes by the individual water resources agencies.

Options. a. Assign all water resource planning to one Federal agency.

b. Develop one set of planning procedures implementing the P&S for use by all water resource agencies.

c. Require a more detailed review of agency procedures for consistent implementation of the Principles and Standards.

d. Require review of agency planning documents by an independent review board.

e. Revise the Principles and Standards to be specific or make other changes which could contribute to consistent implementation.

4. *Problem.* There has been unnecessary duplication and effort resulting from the isolation of the Principles and Standards from the Environmental Impact Statement procedures.

Options. a. Revise the Principles and Standards to incorporate all information required for the EIS into project planning and documentation.

b. Revise the National Environmental Policy Act to permit reports prepared in accordance with the Principles and Standards to substitute for EIS requirements.

5. *Problem.* The lack of effective project termination procedures whereby inactive or outdated projects can be reviewed or dropped by water agencies has frequently led to building obsolete projects, to uncertainties as to the support of local sponsors for the project, and to unnecessary agency administrative burdens.

Options. a. Submit legislation which would result in automatic termination of inactive projects after a fixed period of time.

b. Implement procedures in all water resource agencies which would provide for an automatic review of inactive water projects, and agency head recommendations to continue or terminate projects.

c. Submit all authorized or administratively approved projects which are not completed after a fixed period of time to an independent review board for possible deauthorization or termination recommendations.

6. *Problem.* The existing form, length, and varying specificity of the Principles and Standards leads to difficulty in comprehension and use.

Options. a. Revise, edit, and reorganize the Principles and Standards.

b. Establish a Federally-sponsored training course for Principles and Standards users.

c. Require the Water Resources Council or other Federal agency to monitor implementation of the Principles and Standards, and recommend appropriate improvements.

ISSUE AREA NO. 2

COST SHARING

Existing policies governing Federal and non-Federal cost-sharing arrangements for the water resources activities have been established over a long period of time by unrelated congressional actions on particular projects and programs and by similarly uncoordinated administrative determinations. As a result, the policies are now inconsistent among programs, among purposes, and among agencies. The situation causes widespread confusion, distorted development, and an inequitable distribution of costs among direct beneficiaries and the general taxpayer.

The present water resources policy review requested by the President will rely on previous recent efforts, particularly the Section 80 study for basic data and information, so that old ground will not be plowed anew.

The President's objective to obtain a "comprehensive reform of water resources policy, with water conservation as its cornerstone" brings cost sharing immediately to the forefront for it is well known that who pays and how much has a marked effect on the quantity and manner of use and, therefore, on conservation. Furthermore, spending and payment practices are deeply involved in the concept of reform as the President's amplification of his objective indicates. He said,

> "I believe that it is essential to confine the public works efforts of the water development agencies to projects that can meet such defensible criteria as economic efficiency, safety, environmental protection, and a fair distribution of project benefits.

Therefore, proposals to change present cost-sharing arrangements should facilitate the President's objective, emphasizing the amplified points. On this basis, five options are presented for consideration. These options are not the only ones acceptable or conceivable; there is no intention to restrict the choices. The five presented here constitute a selection based on experience in at least some water resources programs and projects. Public comment is invited on these and any other issues.

All of the options involve some level of cost recovery. Three of the options do not change the Federal role in financing. The other two options would change the Federal role in financing. For the purposes of this paper, the term "cost recovery" refers to any level of repayment of the initial or implementation costs and any part of operation and maintenance costs and interest on the funds by non-Federal participants. The term "financing" refers to the initial funding of the project or program through appropriations, bond issues and the like.

Cost recovery may be obtained by marketing the services of a project such as hydroelectric power, water supply, and navigation passage. For those benefits or functions of a project, such as flood control, which have more widespread effects and for which marketing means are insufficient, costs may be recovered by State or local government taxation or other means. The distinction between financing and cost recovery is important in determining the impact of changes in policy.

The Cost-Sharing Options

The five cost-sharing options are briefly described below. They are intended to cover all the water resource-related programs, including grants and loans, of the agencies in the following list unless otherwise explicitly stated under a particular option. The public should say, in comments on the options, whether any exemptions or exceptions are necessary or desirable and the reason for that view.

Agricultural Stabilization and Conservation Service
Farmers Home Administration
Forest Service
Soil Conservation Service
Corps of Engineers, Civil Works
Appalachian Regional Commission and Title V Commissions
Economic Development Administration
National Oceanic and Atmospheric Administration
Environmental Protection Agency
Community Development
Bureau of Land Management
Bureau of Reclamation
Bureau of Outdoor Recreation
National Park Service
Fish and Wildlife Service
Geological Survey
Coast Guard
St. Lawrence Seaway Development Corporation
Federal Power Commission
Tennessee Valley Authority
Water Resources Council and River Basin Commissions
Small Business Administration

The costs referred to for sharing in these options include planning, implementation, operation and maintenance, and interest.

Note.—To facilitate comparison among cost-sharing arrangements, the existing level of cost sharing for each purpose has been computed as a composite percentage (combination of construction costs, and OM&R costs) and is termed a "composite effective rate," and is shown in Table 1.

A "composite effective rate" takes into account the timing of the payments made by the cost sharer, the value and timing of any contributions in kind, such as lands, easements, and rights-of-way, the capitalized value of the project's OM&R purposes, a discount rate for calculating present values of future costs and payments, and the statutory percentage cost-sharing rate.

Use of the "composite effective rate" concept allows the cost-sharing arrangements of programs and agencies to be compared on an equal basis. All cost-sharing rates, when stated in effective composite terms, accurately reflect the differences among the cost-sharing requirements of the several programs. Without this "effective rate" adjustment, an accurate comparison cannot be made. A 20-percent cost share in one area may not mean the same as a 20-percent cost share in another area because the repayment terms are not the same.

Option 1—The current situation.—This option would continue the existing cost-sharing arrangements without change and presumes that the inconsistencies in repayment terms and variations among agency programs and purposes that now exist are supported by valid reasons. There are 185 existing cost-sharing provisions, which vary from purpose to purpose and among agencies. Generally, costs are shared between the Federal Government and certain non-Federal governments or entities on the basis of a portion of the construction cost and another portion of the OM&R. Also, interest on the costs to be repaid is charged for some programs, such as munipical water supply and hydroelectric power. Planning also varies in level of cost sharing but averages about 90 percent Federal.

Option 2—Cost sharing floor.—This option modifies existing cost-sharing arrangements to achieve greater consistency among agencies and measures providing similar benefits. It provides that cost sharing be expressed in terms of "composite effective rates." (This concept is described above.)

Minimum levels of composite effective non-Federal cost sharing would be established for those project purpose categories that are now below a desired average. For example, agencies providing recreation and fish and wildlife or any other purpose targeted at less than a 20-percent composite effective rate would have to impose a minimum 20-percent composite effective rate in the future under this option. However, water quality control programs and projects would not be included.

If existing composite rates are higher than the minimums, the existing higher rates would continue to be charged.

The discount rate used for calculation of composite effect cost-sharing rates should be the project evaluation discount rate except for municipal and industrial water supply and hydroelectric power, where the greater of the project evaluation rate or the current yield rate on long-term Treasury bonds should be used.

The non-Federal cost-sharing level for each program and project purpose would generally be higher than at present, but no existing rate would be decreased if now higher than 50 percent.

Repayment interest rates should continue without change, except the rates for M&I water supply and hydroelectric power, which should be the yield rate on long-term Treasury bonds with at least 15 years left to maturity.

This option would apply to all projects not yet under construction on the date of enactment of necessary legislation, and also to all marketable project services not yet under contract.

Option 3—Joint venture.—This option provides that 50 percent of the initial capital implementation or financing costs of projects would be provided by the Federal Government and the other 50 percent would be provided by State, interstate, or local governments or possibly also by public non-governmental entities. The financing or initial capital implementation costs of the partners would be recovered through marketing of vendible services of the projects. The revenues obtained would be divided between the partners. All operation and maintenance would be non-Federal. (If necessary, a Federal loan program limited to 25 percent of the joint venturer's share might be provided for partners unable to finance otherwise.)

Projects could be planned and proposed by non-Federal governments. Federal planning would be confined to clearly interstate situations. Operation of the joint venture projects would be by the non-Federal partner on mutually determined terms and conditions.

Option 4—Block grant.—This option provides for grants to States as a replacement for the present Federal direct water resources development programs and projects.

Initially, each State would receive grant funds equivalent each year to the average annual Federal water resources investment in that State for the past several years. Eventually grants would be distributed on a formula basis reflecting population, economic, and other factors related to water resources-related investment and expenditures in the States.

The States would select the projects to be built and provide their own additional financing if necessary.

The Federal agencies would build and operate only those interstate inland navigation systems and hydroelectric projects that could be operated to affect direct benefits or costs across State lines. All other projects would be built and operated by non-Federal entities. For projects to be implemented by non-Federal governments or entities, the Federal planning role, if any should not go beyond the feasibility study stage.

This option would be applied to all projects not yet under construction on

the date of enactment of the required legislation.

The States or their legal subdivisions would carry out the planning, construction, operation, and maintenance of all new water resources development projects (except those interstate navigation and hydroelectric projects referred to above), including nonstructural, such as greenway—floodways and relocations.

Initially, Federal technical assistance would be available to aid States and localities with project implementation problems, but it is expected that the need for Federal technical assistance will decrease within a few years as State, local, and private contractor experience with water projects increases. Therefore, implementation and OM&R would be a non-Federal responsibility.

Option 5—Full Recovery. This option provides that the Federal Government should plan, finance, implement, and operate projects and programs such as they are today. However, cost-sharing terms for each project purpose or service provided by a project would require 100 percent repayment of all costs involved, including operation, maintenance, and replacement costs, interest during construction, and interest at the project evaluation rate for all repayment obligations scheduled over a period of years.

Costs would be recovered by marketing of the vendible project services, such as hydroelectric power, all forms of water supply, navigation passage, etc. Costs of less or nonmarketable features would be recovered from the States or other entities benefiting from the projects.

Implementation and operation of the projects would be by the Federal Government in the same manner as at present.

This option would be applied to all projects not yet under construction on the date of enactment of legislation necessary to authorize the option and also to all marketable services of existing projects that are not yet under contract.

TABLE 1.—*Summary of Effective Composite Non-Federal Cost Sharing Rates for Five Options*[1]

	OPTION				
Purpose	*No. 1 Current Situation* [2]	*No. 2 Cost Sharing Floor*	*No. 3 Joint Venture*	*No. 4 Block Grant*	*No. 5 Full Recovery*
Urban flood damage reduction	20	24 min.	55 [3]	↑	100
Rural flood damage reduction	11	16 min.	55 [3]	↑	100
Drainage	46	55 min.	100	↑	100
Agricultural water supply—irrigation	19	43 min.	100	↑	100
Erosion and runoff control	34	39 min.	60	↑	100
Municipal and industrial water supply	64	100	100	↑	100
Point source water quality management	64	64 min.	64	↑	64
Recreation—general	19	29 min.	55 [3]	50	14
Fishing and hunting	19	24 min.	55 [3]	↓	100
Boating—berthed and launched	38	40 min.	55 [3]	↓	100
Natural areas	4	[0]	55	↓	0
Historic and cultural sites	0	0	55	↓	0
Ecological systems	26	0	55	↓	0
Navigation	7	10	55 [3]	↓	100
Hydroelectric power	64	100	100+	↓	100+

[1] Both implementation costs (that is, first costs) and the present value of operation, maintenance and replacement (OM&R) are considered in arriving at an effective composite *non-Federal* cost-sharing rate. Moreover, in computing the effective composite non-Federal cost-sharing rates for Option No. 1 (current situation), any reimbursement at less than 6 percent interest or with terms greater than 50 years or with interest-free periods was considered to involve an implicit subsidy to non-Federal interests and an appropriate adjustment was made.

[2] For a complete presentation and explanation of the current situation, see U.S. Water Resources Council, Planning and Cost Sharing Policy Options for Water and Related Programs, *Part 5A—Options for Cost Sharing: Implementation and OM&R Cost Sharing for Federal and Federally Assisted Water and Related Land Programs*, November 1975, U.S. Government Printing Office Stock No. 052-045-00038-0. It should be noted that EPA regards the 64 percent non-Federal cost sharing for point source water quality management, which was estimated in 1975, to be out of date.

[3] Based on the general rule that non-Federal interests will contribute 50 percent of capital costs and bear full costs of OM&R.

ISSUE AREA NO. 3: POLICY CONSIDERATIONS AND ALTERNATIVES RELATIVE TO INSTITUTIONS AND INSTITUTIONAL ARRANGEMENTS

In announcing a comprehensive review of national water resources policy, President Carter emphasized that policy reforms should promote more efficient water use, equitable allocation of water project costs and benefits, increased safety of water development facilities and works, all in recognition that environmental quality must be maintained and enhanced. To a great degree, the institutional arrangements relative to the acquisition, use and disposition of water resources affects whether and to what extent these goals are realized or frustrated. Accordingly, an examination of alternative water resources related institutions is appropriate in a national water resources policy review. The legal and economic institutions influencing water resources are many and complex. Any review must, therefore, be very broad. For the review to be comprehensive, it should not be limited to what has been traditionally viewed as strictly Federal areas concerning water resources. This is because Federal water resources policy and programs are influenced by other governmental institutions, primarily those of the States. The review, however, will respect the fact that the acquisition, use and disposition of rights to use water have historically been a matter of individual State law. But this respect is tempered by the recognition that as demands on the Nation's limited water resources increase, it may be necessary to develop a national perspective both as to water quantity and quality and to ensure that Federal policies promote the recognition of realistic goals through changes in existing institutions at all levels of government.

To elicit comment concerning institutional arrangements and water, a set of identified problems will be stated, followed by a listing of potential options for resolving the problem. Even though the maintenance of the status quo is not listed as an alternative, it is, of course, an option for consideration. The list of problems and options is not assumed to be all inclusive, and comments relating to other areas are welcomed and expected. In addition, it is recognized that many of the problems cited do not exist in all jurisdictions or levels of government and in many cases have been adequately addressed and resolved. The purpose of the notice is to identify what problems are being examined and provide a basis for substantive and constructive public comment.

Problem 1. Water subsidies have promoted or resulted in competitive advantages being afforded certain uses such as irrigation, navigation or recreation, and have restricted the recognition of other uses and values. The same subsidies appear to have failed to provide incentives necessary to promote efficiency, water conservation, economic output or environmental quality. Disparities in subsidies, including the failure to recognize the value of alternate uses of water, have resulted in water quality degradation attributable to overuse. Additional problems of equity may arise from the possibility that individuals may realize an unwarranted and unearned share of values created by government investment.

Options. 1. Reduce the subsidies influencing water prices through modifying Federal statutes and procedures which provide for the use of unrealistic interest rates and repayment obligations relative to water projects. This option is discussed further in the option papers concerning cost-sharing and water conservation.

2. Establish and apply user charges to recover the full cost of programs and projects from the actual water users. This option might also provide incentives to conserve limited water supplies and encourage their most economic use.

3. Allow the market system to operate as freely as possible relative to water prices by selling water to the highest bidder including water in Federal proj-

ects. This might result in significant redistribution of existing uses; for example, irrigation uses might be deferred to municipal and industrial uses since municpal and industrial users could presumably pay more than agricultural users.

4. Administer prices for selected social and environment objectives by subsidizing these functions to enable them to compete in a market oriented system. For example, as the need to provide water for energy development increases, it may be necessary to protect certain agricultural interests, recreation or minimum stream flow needs for fish and wildlife habitat or environmental quality.

Problem 2. Water related laws and management practices that may impair the recognition of environmental values include: 1) Concepts of "beneficial use" and "diversion" in water law systems frequently have not evolved to include instream flow needs or certain offstream environmental uses; 2) Water laws in many riparian oriented States may not provide for effective allocation of water to achieve and protect instream flow needs; 3) Inadequate coordination among Federal agencies together with their procedures and levels of compliance with Federal environmental planning requirements may result in substantial disparities in attaining instream flow needs in water resource developments which are Federally constructed, financed, insured or licensed; 4) Federal contracting practices may inhibit re-examination of already constructed water projects to determine if and how they might be modified to obtain environmental objectives.

Options. 1. Direct Federal agencies to review existing water related practices and procedures and to recommend legislative or administrative changes necessary to protect environmental values.

2. Authority to review Federal agency compliance and coordination relative to environmental quality concerns, aside from governmental reorganization, could be vested with the Council on Environmental Quality, Environmental Protection Agency or the Water Resources Council with broad power to monitor and require agency compliance.

3. Establish institutions at the Federal level whereby instream flow needs could be identified, quantified and effectively provided for through specific procedures. These procedures could include full recognition, exercise, and protection of Federally reserved rights to water, compensation to holders of valid rights whose uses are discontinued, either temporarily or permanently, when the water is needed for these instream uses and ensuring that in future Federal projects the instream uses have a greater priority than uses confirmed under contractual arrangements.

4. State and local governments could be required to adopt strategies providing for instream flow needs through State law. Federal sanctions, through contracting, licensing and permit approval could be used to implement this alternative.

Problem 3. Many State water rights systems have developed without regard to the physical fact that surface water is related to groundwater and certain sources of groundwater are related to each other. The creation of legal distinctions where no physical distinctions exist may result in inequitable and inefficient uses and effects while making rational management more difficult. These problems may arise, for instance, in the case where a surface diverter may be protected from adverse upstream junior diversions but is without legal remedy to prevent the same harm due to upstream groundwater pumping since the law does not recognize that the groundwater withdrawals may decrease the downstream surface flow just the same as does the upstream surface diversion. Inefficiencies may arise when groundwater pumpers continue to deplete the underground source even in years when surface supplies are adequate to meet their needs but go to waste since it is legally impermissible for holders of groundwater rights to divert surface water.

A related problem may arise when laws and programs fail to recognize the relationship between water quality and water quantity. Thus, problems may result in stringent regulations of discharges of pollutants into a watercourse while no attention to quality is given to permitting a diversion from the same watercourse even though the diversion may have a greater quality impact by reducing the assimilative capacity of the stream or further concentrating existing pollutants in the stream than does the discharge of the pollutants. In either case there are adverse quality consequences and in each case they should be recognized.

The integration of surface and groundwater and administering rights to make surface diversions from streams are primarily matters of State law; however, the Federal Government does have an interest in these problems, particularly if State law might threaten the viability of a Federal project or program. For example, Federal water quality control programs may be ineffective if State administration continues to grant rights in streams in which existing diversions make water quality standards difficult to attain. Another case is where Federal reclamation storage facilities and thus delivery capabilities and cost recovery prospects are endangered due to decreased surface flows resulting from upstream groundwater withdrawals.

Options. 1. The Federal Government could exercise existing legal powers to ensure that State systems take account of these physical relationships. Legal authority for Federal action could be constitutionally derived under the commerce clause in cases involving navigation and water quality and under the property clause as it relates to public lands and resources. In addition, there could be legal authority to force State action in cases where the proprietary interests of the United States in a dam, reservoir or other facility are damaged due to actions sanctioned under State law.

2. The Federal Government could work with the Council of State Governments or similar entity to develop a comprehensive model water code which would recognize these relationships and provide a basic model and standard for treatment of the problem.

3. The Federal Government could condition future water quality grants, flood control and reclamation expenditures and projects and other water related assistance on States' adopting and implementing legal and administrative systems which recognize these physical relationships and provide for their integrated management.

4. The Federal Government could review all licenses, contracts and permits and ensure that all actions taken under them are consistent with an integrated approach to water resources management.

Problem 4. Existing substantive water rights systems have resulted in institutional arrangements which may result in inflexibility, relative to the allocation and use of water which may lead to inefficiencies and inequities. Potential problems include: 1) Water rights are established under the laws of a single State and are generally exercisable and alienable only in that State. This institutional constraint may result in interstate and regional programs such as interbasin transfers and regional plans for resource development being more difficult to attain. 2) The transfer of water rights within a State is frequently difficult due to inadequate information about the extent of the right being transferred and the effect of the transfer on other users; legal doctrines such as the appurtenancy doctrine which allows the transfer of water rights only upon the transfer of the land upon which it has been used; legal authority vested in irrigation and other special districts to disapprove transfers within their watersheds whether or not the district can demonstrate an adverse effect on the rights they represent; and subsidies in the form of very low water prices and agricultural supports which distort the market and allow for the maintenance of the existing uses longer than would otherwise be economically feasible. 3) The legal concepts of beneficial use and reasonable use generally are the measure and limit of a water right; however, these standards are rarely defined and even more rarely enforced. The failure to implement these standards may result in more water being used than would otherwise be necessary through more efficent methods of water application and reuse. 4) A related problem may exist in the concept of forfeiture which is frequently legislatively declared and exists almost universally in the common law. The basic idea is that if one does not use the water to which he is entitled, the right to use will cease after a given time. This punishes conservation and rewards excessive use since the former restricts the right and the latter expands it. 5) A final problem may arise from the fact that many rights are not evidenced by any record and many that are have not been adjudicated and specifi-

cally quantified. This circumstance leads to uncertainty, and frequent conflicts usually are resolved in ad hoc judicial proceedings.

This problem consists almost entirely of provisions existing in State law over which there is no direct Federal control. However, the United States holds many water rights as proprietor and trustee and thus has an interest in seeing that they are not infringed and preempted through inadequacies in State law. In addition, many of the water rights exercised under State law have been developed through Federal projects and programs.

Options. 1. States could adopt and implement comprehensive water resource management statutes which could provide for the adjudication, quantification and public recording of all rights to use water. This could provide greater knowledge and certainty concerning water rights and possibly result in greater degree of transferability and public control over the allocation of water.

2. In the case of interstate uses, demands and transfers, the Federal Government could develop a data bank of water rights established under State laws. These data could be used in facilitating interstate water uses and transfers and also in settling interstate water disputes.

3. The Federal Government could review existing State water law systems and determine whether or not they promote equity, efficiency and environmental quality consistent with Federal policy. In States where the water laws failed to meet the Federal standard, future water related Federal programs and projects such as reclamation, flood control and insurance, water quality control and others could be delayed or conditioned upon compliance by the State. Failure to condition Federal assistance in such a way could result in Federal programs and projects being integrated into a system of laws and practices which are completely contrary to current Federal policy.

4. The Federal Government could purchase rights to water and re-allocate them to the most socially desirable or economically productive use. Purchases could be through voluntary sales or through eminent domain procedures.

Public comment is requested on additional methods for resolving the problems in State water rights systems.

Problem 5. Relatively recent legislation and implementing procedures, particularly the National Environmental Policy Act of 1969 (NEPA) have provided increased opportunities for public involvement in water resource program planning, implementation and management. Even so, problems may still exist concerning the timeliness and quality of the opportunities for public input. Increased public participation may result in many other institutional problems being brought forward for discussion and solution.

Options. 1. NEPA requirements for public participation could be strengthened by affording input at the earliest stages of project initiation. For example, require public notice that study is being initiated relative to a potential project and that a public hearing or comment period will be provided concerning the nature and scope of the study and project.

2. The Water Resources Council Principles and Standards could be broadened to increase public input through notice and public hearing and comment at designated stages of the water resource planning process and to apply the procedures to all water related functions and programs including grants and loans.

3. Procedures and practices of governmental agencies might be reviewed to determine the extent of public participation requirements and the degree of compliance with those requirements.

It must again be emphasized that the problems outlined above and the alternatives listed to those problems are not exhaustive and certainly do not represent all institutional problems related to water resources or the range of options available to resolve those problems. Accordingly, the scope of this notice should not be interpreted to limit the scope of comments and suggestions. There is a great need that comments and suggestions be as concise and specific as possible and, where possible, accompanied by proposals and programs for substantive action.

Issue Area No. 4: Water Conservation

INTRODUCTION

On the subject of water conservation, President Carter said.

"In the arid West and across the entire Nation, we must begin to recognize that water is not free—it is a precious resource. As with our energy problem, the cornerstones of future water policy should be wise management and conservation. Irrigation efficiency, water pricing, ground water management, and thoughtful land-use decisions will help institute lasting protection from drought and lessen the need for expensive new water projects."

Many water conservation problems and their solutions are intertwined with both water supply and demand. In some cases there is an absence of policy or an indifferent policy so that the consequences of some water use go unrecorded and are, therefore, unknown in cumulative magnitude or effect. In other cases, government policies and programs contribute to excessive use by providing for particular selected uses on a preferential basis and at much less than cost.

Furthermore, the Federal Government sets many prices or rates for water, depending upon the purpose (irrigation, municipal and industrial, hydropower, etc.) and the Federal agency involved. Rates charged are often nonmarket clearing rates and the revenue recovered from selling water is often considerably less than the full cost of providing the service. Pricing lower than actual cost has, in many cases, encouraged the wasteful use of water and led to pressure for unnecessary Federal projects and to heavy subsidies to users, while denying water to more productive uses.

Although water for most uses has been supplied at low cost, the major use by volume, irrigation in the West, has been supplied at much less than cost and so there has been little incentive for users to conserve.

Other areas of the country and other water users have been equally lacking in incentives to conserve. In the East and South, the apparent abundance of water allowed the tacit designation of many streams for waste disposal, which has led to pollution and degradation of water quality.

Industrial and municipal users also contribute to the wasteful use of water. Riparian water law, the absence of rules for the use of ground water, and the lack of metering and other pricing mechanisms often make water available for the taking without payment and without public accounting for effects. Controls on the disposal of waste water, at least at the outset, are also loosely enforced.

These remarks are intended only to describe the situation and the path of its occurrence, not to pass judgment on those who set the course. This paper should serve to bring attention to the entire process of water use, focusing attention on the several parts of the cycle of development, withdrawal, use, and disposal and the effects on the water bodies themselves from the withdrawals and the disposal. The entire process has a potential for conservation—just as it now exhibits a tendency for carelessness and waste.

It should also be recognized that each step in the use of water is often planned and managed separately by diverse public jurisdictions or private entities It may be that this diversity is a contributory factor to the deficiency in conservation.

PROBLEMS

The following discussion of problems and options for solutions is intended to provide a basis for substantive and constructive public comment. It is not intended to be all-inclusive, but presents primary issues in order to provide a basis for further discussion and formulation of recommendations to the President.

A. *The price of water is insufficent to provide the incentives necessary to promote efficiency and prevent wasteful uses*

Current policies result in low prices for water, which contribute to wasteful and inefficient uses. a failure to recover the costs of providing the water, and subsidies that result in competitive advantages being afforded certain uses, such as irrigation, navigation or recreation. Movements toward more rational pricing policies will lead to arresting the growth in water use and the more efficient utilization of water.

Options. Options for pricing water are essentially those discussed in the paper on Institutions and Institutional Arrangements in the section on "Options to reduce water subsidies." Furthermore, the issues addressed in the cost sharing paper will directly affect conservation since who pays and how much is paid has

a marked effect on the quantity and manner of water use. In addition to these options, the following should be considered.

1. Provide for economic penalties (monetary charges) in *all* Federal water supply contracts to apply to the consumptive use, measured by the difference between the volume of water served and the volume returned to the stream; that is, an acre-foot charge, in addition to the water service rate or repayment obligation, would be levied against the depletion volume.

2. Provide for an economic penalty applicable to municipalities and other publicly-owned water service entities that do not establish water conservation programs. The penalty would be in the form of a percentage reduction in Federal financial aid for waste treatment facilities and other water-related programs. Also, consideration should be given to a Federal effluent charge against municipalities and others to induce conservation of water.

3. Provide for establishment of the repayment obligation and the water rate for Federal irrigation projects on the basis of the economic benefits attributed to the project, not on the basis of repayment capacity. Also, limit the water service contracts to 10-year periods subject to optional renewal on terms and conditions reflective of the later time. These changes would produce more careful water resource investment decisions by requiring the water user to pay more and for a limited period. This option is closely related to the cost sharing options.

4. Provide for an economic incentive or penalty system for all industrial waste discharges, as described above.

5. Require that the full cost of providing additional water supply be charged to new industry and population served in water-short areas.

B. *Inadequate consideration has been given to meeting existing water needs by means of comprehensive watershed management practices, including storage and transfer of surplus water derived from existing supplies*

Improper farming, grazing, and forestry practices degrade water quality and reduce the quantity of water available for both instream and offstream uses. Excessive surface runoff can cause flooding, soil erosion, and leaching of salts, creating problems for downstream users. Such water is also unavailable for ground water recharge, irrigation, maintenance of minimum streamflows, and other needs which occur when precipitation is inadequate.

Options. 1. Accelerate the development of comprehensive Federal-State water resources management programs for major watersheds and river basins, integrating conservation of surface, ground, and waste water resources in relation to existing uses.

2. Require the adoption of such comprehensive programs to be considered as a major factor in determining future Federal water resource project funding priorities.

3. Establish regional water resource allocation boards, including Federal, State, and interstate government representatives, to coordinate water resource uses now controlled by the respective jurisdictions.

4. Provide economic incentives for metropolitan areas to plan, implement, and manage water supply and waste disposal systems on a unified area-wide system to encourage reductions in water use.

C. *The limited reuse and recycling of water reduces the quantity and quality of water available for all offstream uses and instream values.*

Excessive use of fresh water supplies has led to the development of excess capacity in sewer treatment facilities, mining of ground water, and premature construction of storage and conveyance systems. A major reason users have not realized the potential savings resulting from reuse and recycling is that water has been priced below the cost of acquiring and treating it.

Options. 1. Provide economic incentives for industrial and municipal water recycling and waste water reuse through levying of effluent charges for waste water disposal and more rational water pricing policies. This would include the implementation of the effluent limitation standards provided for under P.L. 92–500.

2. Require all users (municipal, industrial and irrigation) to phase in reuse and recycling techniques to increase the supply of fresh water.

3. Allocate, through Federal-State cooperative programs, water supplies among uses and users according to quality requirements in order to encourage reuse and recycling techniques.

D. *Ground water supplies are poorly regulated and are being seriously depleted in some areas through excessive withdrawals.*

Ground water depletion is occurring at an increasing rate, causing lowered water tables, land subsidence, and reduced surface streamflows. This has resulted from a lack of knowledge of the total capacity and recharge rates of major aquifers and from the absence of effective regulatory and pricing policies which integrate ground and surface water use.

Options. 1. Establish a Federal-State cooperative research and monitoring program to improve the existing ground water data base.

2. Require management plans integrating ground and surface water use as a component of all Federal and federally-assisted water resource development projects.

3. Establish a Federal-State program for management of an integrated surface-ground water system.

4. Develop a Federal regulatory program for ground water management, to be operated and managed by the States after meeting minimum Federal requirements.

E. *Inefficient use of water in existing water-consuming facilities and production processes is using large quantities of water where a significant change in the process could greatly reduce the need for water.*

This problem is prevalent in many sectors: agricultural irrigation practices; water-intensive processing of products; spillage, leakage and waste. Significant savings (and improved water quality) can be realized through the physical modification of existing facilities and improved operation and maintenance.

Options: Adopting the policies that lead to more rational water pricing will provide the incentives to adopt more water-efficient means of doing business for the myriad of industrial, commercial, residential, and agricultural water users. The amount of water saved will depend on the costs and savings of introducing new techniques and equipment in the particular sector. Options to strengthen these incentives include: (1) strong public information and education programs, possibly including technology assessment, workshops, demonstration projects, and surveys of planning and zoning rules to encourage water conservation changes; (2) Federal performance standards for water use to apply to water-intensive industries and products.

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